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VAMC Orlando's Ergonomic Program

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Abstract

Micro Ergonomics is the science of designing workstations, workplaces, machines, and work tasks with the capabilities and limitations of human beings in mind. Ergonomics is the enhancement of all aspects of job performance, accomplished through the design of work, so that only the desired reaction or behavior is produced.Designing the job, workspace, workstation, etc., to fit the person, not the person to fit the equipment, job, etc.Making the workstation, job task, etc., worker friendly.
Macro Ergonomics:

- People properly trained
- People physically fit to do their job
- Assigned to a job they can handle
- Injuries managed correctly
- Employees treated by management

Ergonomic Disorders (Overexertion Injury vs. Cumulative Trauma).Work Related Musculoskeletal Disorders are disorders of the musculoskeletal and nervous systems occurring in either the upper or lower extremities or the back in accordance with OSHA.Over Exertion Injury (Strain vs. Sprain)—Over exertion injuries occur from lifting, pulling or pushing heavy or unwieldy objects or persons.Cumulative Trauma Disorders are defined as any combination of stresses applied to the body over a period of time from which adequate recovery does not occur.Increasing Cumulative Trauma Disorders (CTDs): (1) Awareness, (2) Changes in production, (3) Older work force, and (4) Sociological changes.Ergonomics must be an ongoing ever improving process.

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*Keywords:*VAMC Orlando Ergonomic Program; Micro Ergonomics; Macro Ergonomics; Cumulative Trauma Disorders

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1. VAMC Orlando's Ergonomic Program

Discussion: VAMC Orlando's Ergonomic Policy.
VAMC Orlando Ergonomic Policy 138-27; Expires: 5/30/2015

- PURPOSE. To provide guidance for the establishment and implementation of a FacilityErgonomics Program, this includes worksite analysis, hazard prevention, and control.
- POLICY. To identify, mitigate, and correct, where possible, the ergonomic job related hazards that cause or contribute to Muscular Skeletal Disorders (MSDs) associated with work performed in the occupational environment. When hazards cannot feasibly be eliminated, the most practical method of control will be implemented.
- SCOPE. MSD prevention is a collective responsibility between the occupational and safety services, supervision, ‘and the individual employees performing work, to ensure that all repetitive work performed in support of the organization is completed in as safe a manner possible.

2. Definition of ergonomics

Ergo= Work and Nomo’s= Laws Of
The two basic principles of Ergonomics:

1) Design or modify the job so you can work from an ergonomic neutral position.
2) Design or modify the job to control the physical and mental fatigue of the job.

Demonstration: Ergonomic neutral is the slightly arched position in the lower back, which is one of the keys to having a healthy back. It is important to maintain this neutral position when sitting or standing or when lifting objects. To find the neutral position of the back, stand up straight. You should feel a slight inward curve in the lower back. Now, pull your stomach in and tuck your buttock under. In this position you should feel the curve in your lower back disappear (flat back). Next, thrust your chest and stomach out to the front and stick your buttocks out to the rear. You will feel your lower back curve increase (sway back). It is undesirable to spend a lot time in either of these postures. Now return to the neutral position, which is actually somewhere between a stooped, flat back posture and the excessive swayback posture

3. Micro ergonomics

Micro Ergonomics is the science of designing workstations, workplaces, machines, and work tasks with the capabilities and limitations of human beings in mind.

Ergonomics is the enhancement of all aspects of job performance, accomplished through the design of work, so that only the desired reaction or behavior is produced. Designing the job, workspace, workstation, etc., to fit the person, not the person to fit the equipment, job, etc.

Making the workstation, job task, etc., worker friendly.

4. Macro ergonomics

Macro Ergonomics is the analytical approach in ergonomics which takes into consideration a wide range of factors from the physical evidence to environmental considerations. Some of these considerations are in the questions that follow, in regards to health and safety.

- People properly trained
- People physically fit to do their job
- Assigned to a job they can handle
- Injuries managed correctly

- Employees treated by management
- Active caring

5. Definition of ergonomic disorders

Work Related Musculoskeletal Disorders are disorders of the musculoskeletal and nervous systems occurring in either the upper or lower extremities or the back in accordance with OSHA.

Over Exertion Injury (Strain vs. Sprain)-Over exertion injuries occur from lifting, pulling or pushing heavy or unwieldy objects or persons.

Cumulative Trauma Disorders are defined as any combination of stresses applied to the body over a period of time from which adequate recovery does not occur.

Some warning signs for Cumulative Trauma Disorders (CTDs) that a proactive supervisor should look for are as follows. Pain gestures, moving constantly, employee fixes, complaints of discomfort, low quality, low productivity, absenteeism, self- treatment, and low morale. If the supervisor cannot fix the work station, then the Safety department should be called to conduct an ergonomic assessment immediately.

Why are Cumulative Trauma Disorders (CTDs) increasing? (1) Awareness, (2) Changes in production, (3) Older work force, and (4) Sociological changes.

6. Proactive ergonomics

Safety and Occupational Health professionals conduct surveys, interviews, and ergonomic assessments. They investigate employee complaints of fatigue, discomfort and pain. This requires planning and time.

7. Reactive ergonomics

Safety and Occupational Health professionals conduct post injury investigations, return to duty examinations, and only get involved after the injury has occurred.

Employees assume risks with new jobs that they may not recognize until they begin working. Some of these risks include that the employee may not be physically conditioned for the job, properly trained, may not like the new job, may not want to complain and may try to over work. All of these risk factors can be managed if the manager and employee work together.

Employees also have personal risk factors which can affect their work. Some personal risk factors include the specific employee's level of fitness, smoking, diet, alcohol/drug use, stress, activities off the job, and body mechanics. As you can see these are very specific for each employee. That is why ergonomic surveys are specifically done for one individual and one job at a time.

8. Ergonomic assessments

The two basic principles of Ergonomics:

1) Design or modify the job so you can work from an ergonomic neutral position.
2) Design or modify the job to control the physical and mental fatigue of the job

Demonstration: Ergonomic neutral is the slightly arched position in the lower back, which is one of the keys to having a healthy back. It is important to maintain this neutral position when sitting or standing when lifting objects. To find the neutral position of the back, stand up straight. You should feel a slight inward curve in the lower back. Now, pull your stomach in and tuck your buttock under. In this position you should feel the curve in your lower back disappear (flat back). Next, thrust your chest and stomach out to the front and stick your buttocks out to the rear. You will feel your lower back curve increase (sway back).It is undesirable to spend a lot time in either of these

postures. Now return to the neutral position, which is actually somewhere between a stooped, flat back posture and the excessive swayback posture.

When employees work in ergonomic neutral they use less energy to work, they maximize the strength and flexibility they do possess, and they are able to use their natural balance and coordination to perform their work tasks.

Undesirable Working Positions for employees are numerous, they include prolonged or repeated non-neutral spinal positions. These positions include bending of the head, neck, and trunk forward, backward, or to the side with or without twisting. As individual move away from the neutral posture, excessive compressionand stress may be placed upon the discs, ligaments, or muscles resulting in fatigue, discomfort, pain, or injury. Along with stretching of the wrist, forearm rotation, elbows winged out, reaching frequently behind the body or moving the shoulders.

The Safety and Occupational Health professional will need to decide if the employees work task is best done standing or sitting. Types of work best done standing are work tasks requiring handling of heavy items and a lot of arm movement. Types of work best done sitting are work tasks requiring stability and precision. It is important to recognize stressful working positions and change them frequently.

As with any other stressor there are workplace controls. Engineering controls are workstation design, design of work methods, and tool and handle design. Administrative controls are Job rotation, improve maintenance/housekeeping, increase rest breaks, increase workforce, and reduce workload. Work practice controls are proper work techniques, new job orientation or training period, and monitoring work practices. Personal Protective Equipment are the keyboard trays, ergonomic mouse pads, ergonomic chairs, wrist rest, monitor riser arms, foot rests, etc.

One last perception held by many professionals that I would like to speak about in closing is the common perception that lifting boxes all day is tiring, but sedentary positions, sitting or standing does not require any work. Metabolic fatigue certainly occurs as the result of sustained position. Blood flow, both volume and rate of flow, decreases. Pooling of fluid in the extremities also occurs. The body's tissues require ongoing nutrition even at low or minimal activity levels. Also mechanical fatigue is an issue. The position of the body when sedentary has bearing. Maintained awkward positions result in: (1) Muscular contractions to maintain the position and (2) potential decrease in blood flow due to internal impingement or external contact stress.

Contact Stress, defined as direct contact to the body casing direct damage. This is where we discuss using a wrist rest versus a palm rest. In evaluating the type and severity of contact stress, look for any part of the body which is in contact with a sharp edge or which maintains weight bearing support upon any surface for a long period of time. This could be a wrist from a desk edge, back of the knee or thigh by the edge of the seat pan, etc.

There are many other stressors that must be accounted for in a work environment. Some of those include heat, cold, lighting, and noise. Warm environments result in an increase in metabolic demand. They can affect a worker's ability to grasp tools, parts, and to manipulate controls due to the effect of perspiration on grasp. As perspiration increases, the friction between the hand and the tool decreases and higher force levels are again required to maintain grasp. Humidity may cause eye protection to fog up, complicating a task. Adequate ventilation and clothing as well as worker rotation are effective control agents. Cold environments, tools or pneumatic tool exhaust may bring about a reduction in tissue sensitivity, manual dexterity and grip strength. As sensitivity decreases the amount of force exerted to perform the task increases and the individual performs more work than what is necessary. Adequate personal protective equipment and worker rotation are effective. Directing tool exhaust away from the user is imperative. Under-illumination may facilitate forward bending of the trunk and head as individual s attempt to get closer to the item they are viewing. Task lighting can be effective to focus illumination where desired and at the same time control glare. Noise is any unwanted sound. One employee's music may be another employee's noise. Potentially damaging noise is frequently encountered in work environments.

In conclusion, the organization must provide an environment of support and concern for the worker. If the employees feel the employer cares for them they are more effective, efficient, and productive at work and if they do become injured they are more likely to be committed to return to work. The safety and occupational health professional should be aware of all the intricacies involved in an ergonomic assessment. Ergonomic assessments and ensuring employees have a safe and healthful work environment make employees feel that management cares about them and values them as a valuable resource to the employer. There are many factors that go into an ergonomic assessments and hopefully looking at VAMC Orlando's Ergonomic Policy will give you some ideas for your own

process. There are many benefits of a good ergonomic process. Those will include improved health and safety, improved quality and productivity, improved profitability, and improved Quality of Life for the Workforce. It is important to remember that a safety and occupational health professional may have to continuously modify an employee's ergonomic assessment to ensure the employee achieves a safe and healthful work environment because there are so many stressors and variations involved.

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